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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,056	08/23/2001	Youlin J. Li	7103/205	1652
757	7590	08/01/2005	EXAMINER	
BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610			NGUYEN, GEORGE BINH MINH	
			ART UNIT	PAPER NUMBER
			3723	

DATE MAILED: 08/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,056

Applicant(s)

LI ET AL

Examiner

George Nguyen

Art Unit

3723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Receipt is acknowledged of Applicant's amendment filed on May 27, 2005.

Claims 15-25 are presented for examination. Claims 1-14 were canceled.

Response to Amendment

1. The affidavit filed on May 27, 2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the Miller et al.'6,719,614 reference.
2. The evidence submitted is insufficient to establish a conception of the invention prior to the effective date of the Miller et al.'6,719,614 reference. While conception is the mental part of the inventive act, it must be capable of proof, such as by demonstrative evidence or by a complete disclosure to another. Conception is more than a vague idea of how to solve a problem. The requisite means themselves and their interaction must also be comprehended. See *Mergenthaler v. Scudder*, 1897 C.D. 724, 81 O.G. 1417 (D.C. Cir. 1897). Since the claims are directed to an apparatus, there is no disclosure from the affidavit to support the specific limitations of "a delivery system... maintained separately" set forth in claims 15, 17, and 21.
3. The evidence submitted is insufficient to establish a reduction to practice of the invention in this country or a NAFTA or WTO member country prior to the effective date of the Miller et al.'6,719,614 reference. In the affidavit, page 3, it is insufficient to establish a reduction to practice of the invention by merely say "yes" to section 5. The affidavit failed to provide the specific date of conception and the specific date of reduction to practice.

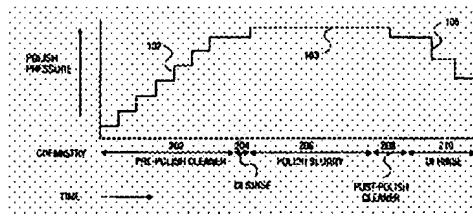
Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al.'6,719,614 in view of Perlov et al.'6,086,457.

With reference to Figure 2, col. 5, lines 40-57, Miller'6,719,614 discloses a method of polishing a copper layer comprising: a) cleaning an oxidized substrate surface with a pre-polish cleaning solution substantially free of abrasives and oxidizers and b) subsequently to the cleaning operation, polish said substrate surface with oxidizing slurry.



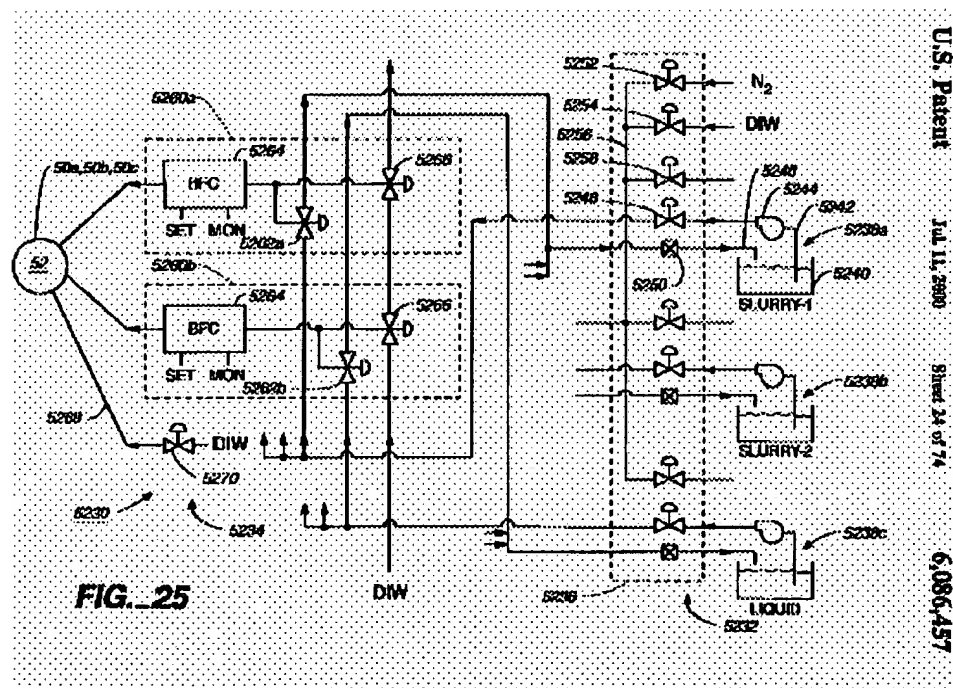
An embodiment of the method of polishing a copper layer on a wafer, in accordance with the present invention, is described in conjunction with FIG. 3. More particularly, in this illustrative embodiment, the copper layer is subjected to a pre-polish cleaning operation. This cleaning operation is typically performed at room temperature, but is not required to be at room temperature. As shown in FIG. 3, oxidation is cleaned from the surface of a copper layer prior to polishing (302). This oxidation cleaning operation removes oxidized portions of the copper surface so as to facilitate the initiation of chemical mechanical polishing. The cleaning solution includes a chelating organic acid buffer system and does not include the abrasives or oxidizers that are typically added to copper polish slurries. In this regard, the pre-polish cleaning solution is substantially free of abrasives and oxidizers. Subsequent to the cleaning operation, the copper layer is subjected to a CMP operation (304).

In col. 4, lines 47-67, Miller discloses that the method can be implemented with more polishing platens, and slurries may be delivered to the polishing apparatus with more than one dispensers.

45 used for a period 202 that corresponds to a first portion of ramp-up phase 102, a DI water rinse is used for a period 204 corresponding to a second portion of ramp-up phase 102, a polishing slurry is used for a period 206 that corresponds to a main polishing phase 103, a post-polish chemistry, i.e., a
50 chemical formulation different from that of the polishing slurry, is used for a period 208 that corresponds to a first portion of ramp-down phase 105, followed by a rinse with de-ionized water for a period 210 that corresponds to a second portion of ramp-down phase 105. This embodiment
55 of the present invention may be alternatively implemented with one or more polishing plateaus. The various cleaners, rinses, and slurries may be delivered to the polishing equipment by way of one or more dispensers. The various ingredients may be pre-mixed and delivered to the polishing
60 pad by pumping through a dispenser. Alternatively, various single ingredients, or combinations of ingredients, may be pumped through a plurality of dispensers and thereby delivered to the polishing pad.

In the embodiment of FIG. 2, polishing pressure ramp-up phase 162 represents a range of zero to five pounds per square inch (psi). In typical embodiments the high end of the pressure ramp is in the range of 1 to 5 psi.

However, Miller does not specifically disclose that the sources are maintained separately, and a transfer mechanism to move wafer to and from the first polishing station and the second polishing station.



With reference to

Figs. 19-25, col. 32, line 18, to col. 34, line 26, Perlov discloses the claimed invention

including: a) a first CMP polisher 50a; b) second CMP polisher 50b; b) a plurality of slurry suppliers 5236a-c which are interchangeably supplied to polishers 50a-c. The advantage of the invention is to be able to simultaneously processing a plurality of wafers in order to improve the output.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method and apparatus of Miller with a multiple polishing stations and multiple slurry dispensers as taught by Perlov et al.'6,086,457 in order to achieve an optimal throughput (col. 6, lines 1-3).

Response to Arguments

6. Applicant should submit an argument under the heading "Remarks" pointing out disagreements with the examiner's contentions. Applicant must also discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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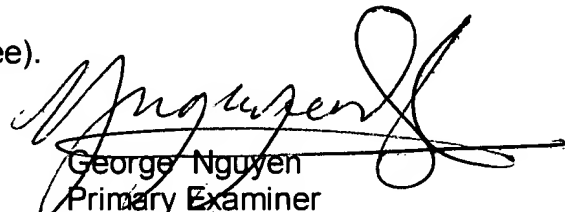
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Nguyen whose telephone number is 571-272-4491. The examiner can normally be reached on Monday-Friday/630AM-300PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George Nguyen
Primary Examiner


George Nguyen
Primary Examiner
Art Unit 3723

GN – July 28, 2005